

Atlantic; for hitherto their remains have been found only on the shores of the Mediterranean. In the fossil state, *Ziphii* (*Choneziphii*, Duv.) abound in the Antwerp Crag.—*Comptes Rendus*, Aug. 6, 1866, pp. 271–272.

*Notes on the Domestic Animals and Plants of the Thirteenth and Fourteenth Centuries.* By JAMES E. THOROLD ROGERS, M.A., &c. &c.

In Prof. Rogers's recently published 'History of Agriculture and Prices in England, compiled entirely from original and contemporary Records, from 1259 to 1400,' there are some interesting facts connected with domestic animals, which, being derived from contemporary records, are of undoubted authority:—

"Partridges were plentiful enough, and were, it appears, generally captured by hawks, and occasionally in nets. Hares may have existed, probably did; but I have never seen an entry of them. Pheasants were, it seems, unknown. Rabbits were found in some localities, but they were very dear" (vol. i. p. 65).

"I do not doubt that these [hare and pheasant] existed, as they are mentioned in chronicles and recited in deeds" (p. 33).

"The banquet [the determination feast of Richard, the son of Thomas Holland, Earl of Kent, on Shrove Tuesday, 1398] appears to have lasted two days. The quantity of beef and mutton consumed was not large; no wonder, for the feast was held in winter; but pork, lamb, and veal were abundantly supplied. Kid is also found; a rare article of food with our ancestors. The poultry consumed in the feast is the largest and most characteristic item. Fowls, capons, geese, ducks, swans, and peacocks are purchased. Amongst wild fowl we find partridges, teals, wild ducks, *Gastrimargii* (which I cannot identify), snipes, plovers, ousels (that is, blackbirds), thrushes, and fieldfares, and, lastly, *Upupa*, which should mean hoopoes, though I can hardly imagine that these birds could have been found in this country in winter time. The swans and geese were fattened in coops on oats and peas. Rabbits, bought as usual at high prices, are also found, forty couple of which are brought from Bushey, in Herts" (pp. 122–123).

Chapter xvi., "The Price of Live Stock," p. 326, contains some most interesting particulars. We extract the following:—"The same kind of stock which is now kept on an English farm was kept five or six hundred years ago. Oxen, cows, horses, pigs, sheep, and poultry were almost invariably reared, though, of course, just as now, lands which were either not available for sheep-farming, or were more profitably occupied in the manufacture of dairy produce, maintained no sheep" (p. 326). "Pigs, too, were the most important kind of animal food. The necessity of using salted meat during a moiety of the year led our forefathers to breed pigs largely, since no meat, it appears, takes salt more readily or preserves its nutritive properties after curing so fully as pork. And besides, poultry, to judge from the price and from the frequent recurrence of poultry-rents in the

rental of estates, must have been very common. A market also was found for capons and geese. Ducks were comparatively rare; and pigeon-houses, kept on most manorial estates, were, no doubt, a nuisance and a wrong, similar if not equal to the dove-cots of France during the monarchy" (p. 327).

"It will be found, on investigating the table given in the second volume, that the price of cows was considerably less than that of oxen. Bulls, too, were cheap, though the entries are not numerous. These facts seem to prove that no attempt was made to improve the breed" (p. 327). "There seems to be no great variety of breeds; at least there is no notable difference of price between north and south country cattle. In all likelihood the breed was the small ox now found in Scotland and other mountainous regions. I have already adverted to the fact that unless cattle had deteriorated in the sixteenth century—a circumstance by no means probable—the carcass was light; for the oxen bought for victualling the navy were not more than 4 cwt. in weight on the average. Taking the hide, a very valuable part of the animal in the middle ages, at an average of 2s. 6d. (it was sometimes much dearer), the flesh of the average ox would be worth 10s. 6d." (p. 329).

"The horses used in mediæval husbandry are distinguished as *affri*; called also stotts and cart-horses. The former may perhaps be still discovered in the coarsely shaped small horses still found in country districts, and employed in the commonest drudgery, whose value chiefly lies in the fact that they are able to subsist on very poor and scanty fare, and can do a great deal of work at a very small cost. These animals are a little, but not much, dearer than oxen, their price being lowest in dear years—probably because when oxen were costlier their use in draught increased, and the value of the small horse declined. Occasionally, however, they sold at considerable prices. Cart-horses are much more valuable than *affri*, and are sometimes, speaking relatively, very dear. Saddle-horses were occasionally very costly, but often sold at no higher prices than those obtained for others employed in agricultural work only" (p. 330).

"Sheep are distinguished as muttons, *i. e.* wethers, as ewes, hoggasts, hoggasters, hoggerels, or bidentes; hurtards or rams, and lambs. Of these, lambs are, of course, the cheapest, though sometimes their price is so high that I have treated them as hoggasters. Occasionally young ewes are quoted under the name of *jercion*. Ewes are very low-priced. Hurtards or rams are not mentioned very often, and are generally dear" (p. 332). "Sheep were liable to several diseases, and among them the rot and the scab" (p. 334).

"Towards the close of the thirteenth century sheep were for the first time affected by a new disease, which has been handed down to our own time under the name of scab. In the few last years of the same century tar dressing was adopted, and has been, I believe, uninterruptedly employed from that to the present time.

"While the sheep was valuable to the richer persons in mediæval society, the most important animal in mediæval economy was the pig. It is not easy, however, since no weights are given, to arrive with

any accuracy at the money value of the animal" (p. 335). "Pigs are occasionally said to be leprous, and are especially liable to measles—that is, to entozoa; and the accounts frequently allude to forced sales of animals in which the latter disease was present and suspected, though it does not appear that such a circumstance seriously depreciated the market value of the animal" (p. 337). "Wild boars, though rarely mentioned, are not unknown" (p. 337).

"There is abundant evidence as to the price of poultry. Of these, the commonest are geese, capons, hens, and pigeons. All are reckoned by the head except the last, which are invariably quoted in the accounts at so many a penny" (p. 338). "Besides the poultry, our forefathers kept swans and peacocks; the average price of the former is 3*s.* 9½*d.* Peacocks are bought at 2*s.* in 1278, and at 5*s.* in 1395" (p. 340).

"The animals [rabbits] are so dear as to suggest either that they were at this time confined to particular localities, from which they have subsequently spread over the whole country (a view which seems to be countenanced by the fact that the price does not increase in the later part of the period), or that they were, which we can hardly believe, rigorously and effectually protected in the interest of the great landowners. They were sold at 5*d.* each in 1270, and from 3*d.* to 4½*d.* afterwards" (p. 340).

"We know but little of the period at which animals now familiar were introduced into England. Thus, though I am far from saying that they could not have been found, it is a little singular that I have never met with any entry of hares or pheasants in the period before me; and it is the more remarkable in the earlier period, because the Bigod and Clare accounts give considerable detail of the domestic life and expenditure of the Earl of Norfolk and Gloucester" (p. 341).

"Fish, as the reader will discover, was by no means a cheap article of food in the middle ages. It was so dear that in the time before us it could hardly have been consumed by the poorer classes except as a luxury or a relish. Nor does this observation apply only to the better kind of fresh fish, as lamprey, salmon, pike, and eels. Herrings and ordinary salt fish and stock fish were, on the whole, relatively dear. The stories told of the exceeding plenty and cheapness of salmon, if they are not purely local, even in later times, would not, as far as can be inferred from the account before me, have been true of the thirteenth and fourteenth centuries" (p. 606).

"Most kinds of fish were sold salted as well as fresh; the business of a stock-fishmonger being a regular branch of trade in mediæval times. Thus we not only read of salt herrings red and white, but of salmon, eels, sturgeon, lamprey, and haddock, lyng, *moruca* (which are said to be cod), mulvells, melyns, hake, *hoburden*, cropling, dog-drave, and hard, stock and salt fish, all of which are cured in this manner" (p. 607).

"There may have been many other kinds of fish kept which do not come generally into the market, or were not purchased by such persons as supply us with information. Hence it is possible that



trout, perch, carp, and barbel may have been well known in the fourteenth century; but I have seen none of these fish in my accounts" (p. 608).

"The few entries of oysters (some in the earlier part of the inquiry, some in the last few years), five of them, are taken from the roll of Thorney in Sussex, the rate being uniformly a halfpenny the hundred. Mussels and oysters are from Sharpness in Kent, each at 7*d.* per bushel" (p. 617).

"The manor house possessed a garden and orchard. But the former was very deficient in vegetables. The householder of the thirteenth and fourteenth centuries grew onions and leeks, mustard, and garden or green peas. He probably also possessed cabbages, though I have never found either seed or plant quoted. Apples and sometimes pears are mentioned as part of the orchard produce; but we read of no plums, except once of damsons. A regular part of the produce of the orchard was cider, and its low price seems to suggest that it was made in considerable quantities. Sometimes, too, wine was grown in England, though not, perhaps, so frequently as has been imagined, the word *vivarium* having been, it appears, often read *vinarium*. Crabs were collected in order to manufacture verjuice—an important item in mediæval cookery. Bees, though honey was dear and wax very high-priced, do not seem to have been commonly kept, though some few entries of hives and swarms have been found" (p. 18).

"The people lived on salt meat half the year; and not only were they without potatoes, but they do not appear to have had other roots which are now in common use, as carrots and parsnips; onions and cabbages appear to have been the only esculent vegetables. It will be found that nettles (if we can identify these with *Urticæ*) were sold from the garden. Spices (the cheapest of which was pepper) were quite out of their reach; sugar was a very costly luxury; and our forefathers do not appear, judging from the rarity of the notices, to have been skilful in the management of bees" (p. 66).

"The hay was gathered into ricks, and, as at present, cut into trusses. It is hardly needful to observe that the grass was all native; it was long after the period before us that artificial or foreign grasses were introduced. Hence the means of supporting winter stock depended upon the supply of hay and such straw as was available for the animals kept on the farm. The bailiff calculated his resources, and killed down for salting at about St. Martin's Day (November 11) as many sheep, oxen, and calves as exceeded his means of sustenance" (p. 16).

"It will be seen that the largest part of the land under the plough was occupied by crops of wheat, barley, and oats. Wheat was the customary food of the people of this country from the earliest times. Even if the evidence were not abundant on this point, the breadth sown annually would be conclusive proof. Barley was sometimes mixed with wheat in the allowances made to farm-servants; but its chief use was in the manufacture of beer, which seems to have been

continually brewed in small quantities and for immediate consumption. Wheat is sometimes, but rarely, malted; oat malt is much more common. The chief use of the oat was for horse-food; but oatmeal was made for the broth or porridge of the house. Rye was very scantily cultivated. A peculiar kind of barley called drageum is very generally cultivated, especially in the eastern counties; drage, like barley, was made into malt. The three leguminous plants, beans, peas, and vetches, were generally not extensively cultivated, the average being small in every case" (p. 27). "Hemp was cultivated to some extent; it was employed for the home manufacture of ropes" (p. 28).

*On Postfloration.* By D. CLOS.

It was only at the commencement of the present century that attention was first paid to æstivation and its importance in classification was recognized. But if the relative position of the floral parts of the same whorl before the expansion of the flower deserves to be taken into consideration, would it not appear *à priori* that their different appearances after anthesis should also possess some interest?

In 1859 M. Fermond indicated the part played in the act of fecundation by the perianth of certain plants. But is there in certain families, genera, or subgenera something of a general character in the arrangement of the floral organs, and especially of the petals, after the accomplishment of fecundation? I have in vain consulted the Annals of Science on this question, and now communicate to the Academy my first observations on the subject.

There are some plants which lose their calyx or their corolla soon after their expansion, and which, for this reason alone, have no postfloration. Thus the sepals of the Papaveraceæ and of many Cruciferae, and the petals of the Papaveraceæ and Cistineæ, and of *Rhexia virginica*, and the corollas of *Alonzoa*, of the Chinese Primrose, &c. fall very soon.

Others have no distinct postfloration, their petals retaining, after anthesis, the same arrangement which they possessed before expansion. Such are the Saxifrages, *Lycium*, *Cestrum aurantiacum*, and *Cajophora lateritia*. In *Pelargonium* these organs become slightly curled.

It is rarely that the postfloration reproduces the æstivation. Nevertheless the families Malvaceæ and Oxalideæ present us with petals resuming, during their withering, the same twisted arrangement that they had in the bud.

The following are the principal types of postfloration that I have been able to distinguish:—

1. CLOSED (*postfloratio occlusa*).—The petals of *Echeveria*, after flowering, approach each other and close the orifice of the corolla.

2. PATULOUS (*postfl. patula*).—The perianth of *Boussingaultia*